First British record of the white-banded grapple-worm (*Melinna albicincta*) from deep water in the Sound of Jura

Myles O'Reilly & Stephen Nowacki

Scottish Environment Protection Agency (SEPA),
Redwood Crescent, East Kilbride G74 5PP
E-mail: myles.oreilly@sepa.org.uk

Under the new European Union Water Framework Directive, SEPA was required to set up a network of new marine surveillance monitoring sites around the Scottish coast to assess marine ecological quality. In May 2006 the SEPA survey vessel, "Sir John Murray", headed for some proposed sites in the Sound of Jura. This preliminary survey was focussed on the community of creatures living in, or on, the seabed in waters up to 200m deep. The area had not been sampled previously by SEPA, although some dredging surveys were undertaken by the Scottish Marine Biological Association in 1975 (Brown, 1983).

Five stations were selected on a 37km transect running roughly NE to SE along the Sound. Sediment grab samples (each of surface area $0.1m^2$) were collected at the stations to investigate the invertebrate community (Fig. 1). All the samples consisted of similar fine mud. The deepest station (Station SJ1, depth 174m) differed slightly from the others with the presence of large worm-tubes protruding from the mud surface. These tubes were ornately decorated with numerous tiny bivalve shells arranged in interlocking stacks and were quite unlike any worm-tubes seen before by SEPA marine ecologists on board the "Sir John Murray". The mud grabs were sieved on 1mm mesh and the retained fauna and worm-tubes (with their occupants) were fixed using formalin. The fauna was examined on return to the laboratory and comprised a variety of polychaete worms, bivalve molluscs, small crustaceans as well as some brittle-stars and small sea cucumbers. The number of invertebrate species per grab sample was quite variable, ranging from only 3 to over 40. The occupants of the large tubes were carefully extracted and were revealed to be a type of grapple-worm (Fig. 2).

Fig. 1. Deploying the seabed grab sampler in the Sound of Jura.

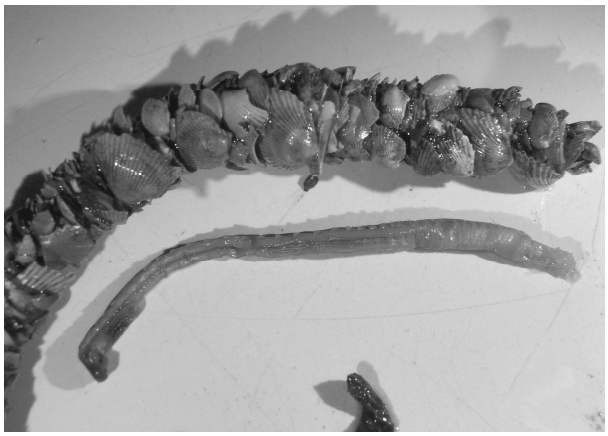

Fig. 2. A 6cm grapple-worm from the Sound of Jura, alongside its decorated tube. Anterior of worm (and of tube) to the right.

Grapple-worms (*Melinna spp.*) are sedentary tube-worms characterised by the presence of a pair of stout grapple-like hooks just behind their row of gill tentacles. The standard key used to identify terebellomorph polychaetes from Scandinavian (and British) waters, (Holthe, 1986), cites two species, *Melinna palmata* and *M. cristata*, from British seas but more recently it has been realised that many records of *M. cristata* in the area actually refer to another species, *M. elizabethae*, (see Mackie & Pleijel, 1995). *M. palmata* is the commonest grapple-worm, widespread in coastal muds, and frequently recorded in SEPA surveys in western Scotland. *M. elizabethae* has also occasionally been recorded by SEPA from sites in Irvine Bay. The tubes of these worms are normally simple mud tubes with only the occasional shell fragment included.

However the grapple-worms from Jura were unusual, with strongly curved hooks and distinct white bands on some of their gills (Fig. 3). Closer examination with a stereo microscope indicated they matched another species, *Melinna albicincta*, the "white-banded grapple-worm", described by Mackie & Pleijel (1995). This species has not yet been recorded in British waters.

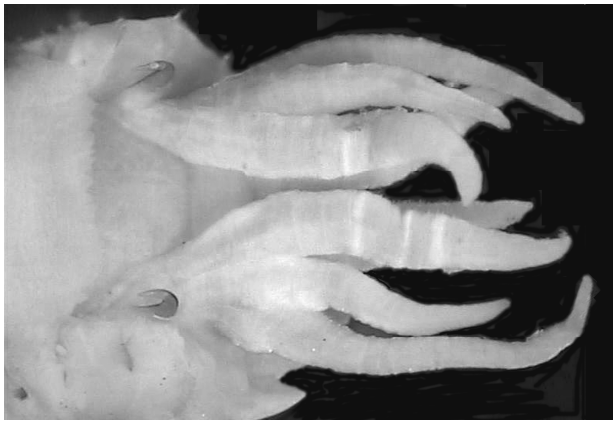

Fig. 3. Anterior region of white–banded grapple-worm (*M. albicincta)* from the Sound of Jura showing curved hooks and gill tentacles with white banding.

The Sound of Jura sampling in May 2006 recovered 10 specimens of *M. albicincta* from four grabs collected at Station SJ1 (55°50.507'N, 05°46.829'W), around 10 km east of the Small Isles. All five Sound of Jura stations were re-sampled in June 2007 and again *M. albicincta* was only found at Station SJ1 where four further grabs revealed over 50 specimens indicating this species is relatively abundant at this station. Voucher specimens have been deposited in the National Museum of Scotland, Edinburgh (NMSZ.2007.098) and at Amgueddfa Cymru – National Museum of Wales, Cardiff.

The distinctive white bands on the inner gills are retained in preserved material and are best observed with incident light. The bands are very difficult to discern with back lighting, used on some stereo microscopes, and may fade on preserved specimens left exposed to strong light. However, *M. albicincta* can be differentiated from *M. elizabethae* and *M. cristata* using a range of other morphological features as tabulated in Mackie & Pleijel (1995).

The ornate decoration of the *M. albicincta* tubes is probably related to the fact that the sediment at Station SJ1 comprises soft mud laden with numerous small dead bivalve shells. Only a few actual live bivalves were present, mostly *Parvicardium minimum*. The shells used to adorn the tubes were predominantly *P. minimum*, but also included *Nuculana minuta*, *Corbula gibba*, *Anomia sp.* and small *Chlamys sp.*(see Tebble, 1966). The tubes were typically 6-10cm long although some were up to 22cm. The grapple worms occupying the tubes ranged in size from 4-6cm long and 2-3mm broad.

M. albicincta is a boreal species which, so far, has been recorded from Eastern Canada, Novaya Zemlya, Norway, Sweden, and the Faroe Islands in depths ranging from 50 to 400m. The identity of the Jura specimens has been confirmed by Dr. Andy Mackie at the National Museum of Wales. Although the *M. albicincta* from the Sound of Jura are the first records from British waters, it may well have been observed, but mis-identified, in previous benthic surveys. Its occurrence in Scottish waters is not surprising. It has probably been building its fancy tubes and minding its own business on the Scottish seabed since the last ice age. As a northern cool water species it may prove to be a potential indicator of global warming, perhaps retreating northwards as waters warm (Gardiner & O'Reilly, 2007).

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